CLAIMS

What is claimed is:

1. A molecule comprising at least 3 aminooxy groups, wherein the molecule comprises oxyalkylene groups.

2. The molecule of claim 1 comprising oxyethylene groups.

3. The molecule of claim 1 further comprising polyoxyethylene groups.

4. A composition comprising molecules of claim 1, wherein the molecules have a polydispersity less than about 1.2.

5. A valency platform molecule comprising at least 3 aminooxy groups.

6. The molecule of claim 5 further comprising oxyalkylene groups.

7. The molecule of claim 6 comprising an oxyethylene group.

8. The molecule of claim 6 comprising polyoxyethylene groups.

9. A composition comprising valency platform molecules of claim 5 wherein the valency platform molecules have a polydispersity less than about 1.2.

10. The composition of claim 9 comprising valency platform molecules having a polydispersity less than about 1.07.

11. A valency platform molecule having the formula:

$R\text{-}(ONH_2)_m$

Formula 1

wherein:

m is 3-50; and

R is an organic moiety comprising 1-10,000 atoms selected from the group consisting of H, C, N, O, P, Si and S atoms.

12. A valency platform molecule having the formula:

$R^c[G_1(ONH_2)_n]_y$;

Formula 2

wherein:

y is 1 to 16;

n is 1 to 32;

y * n is at least 3; and

R^c and each G_1 are independently an organic moiety.

13. The molecule of claim 11, wherein R^c and each G_1 are independently an organic moiety comprising atoms selected from the group of H, C, N, O, P, Si and S atoms.

14. The molecule of claim 11, comprising oxyalkylene groups.

15. A composition comprising valency platform molecules of claim 12 wherein the valency platform molecules have a polydispersity less than about 1.2.

16. A valency platform molecule having a formula selected from the group consisting of:

$R^c[O\text{-}C(=O)\text{-}NR^1\text{-}G_2\text{-}(ONH_2)_n]_y$

Formula 3;

$R^c[C(=O)\text{-}NR^1\text{-}G_2\text{-}(ONH_2)_n]_y$

Formula 4;

$R^c[NR^1\text{-}C(=O)\text{-}G_2\text{-}(ONH_2)_n]_y$

Formula 5;

$R^c[NR^1\text{-}C(=O)\text{-}O\text{-}G_2\text{-}(ONH_2)_n]_y$

Formula 6;

$R^c[R^1C=N\text{-}O\text{-}G_2\text{-}(ONH_2)_n]_y$

Formula 7; and

$R^c[S\text{-}G_2(ONH_2)_n]_y$

Formula 8;

wherein:

y is 1 to 16;

n is 1 to 32;

y * n is at least 3;

R^1 is H, alkyl, heteroalkyl, aryl, heteroaryl or $G_2\text{-}(ONH_2)_n$; and

R^c and each G_2 are independently organic moieties comprising atoms selected from the group of H, C, N, O, P, Si and S atoms.

17. The valency platform molecule of claim 16, wherein R^C and each G_2 independently are selected from the group consisting of:

hydrocarbyl groups consisting only of H and C atoms and having 1 to 200 carbon atoms;

organic groups consisting only of carbon, oxygen, and hydrogen atoms, and having 1 to 200 carbon atoms;

organic groups consisting only of carbon, oxygen, nitrogen, and hydrogen atoms, and having from 1 to 200 carbon atoms;

organic groups consisting only of carbon, oxygen, sulfur, and hydrogen atoms, and having from 1 to 200 carbon atoms;

organic groups consisting only of carbon, oxygen, sulfur, nitrogen and hydrogen atoms and having from 1 to 200 carbon atoms.

18. The valency platform molecule of claim 16, wherein R^c is selected from the group consisting of a C1-200 hydrocarbon moiety; a C1-200 alkoxy moiety; and a C1-200 hydrocarbon moiety comprising an aromatic group.

~~19.~~ The valency platform molecule of claim ~~16~~, wherein R^c comprises an oxyalkylene moiety.

~~20.~~ The valency platform molecule of claim ~~19~~, wherein R^c comprises an oxyethylene moiety.

21. The valency platform molecule of claim 16, wherein R^c comprises oxyethylene units:

$$-(CH_2CH_2O)_n-;$$

wherein n is 1-100.

22. The valency platform molecule of claim 16, wherein G_2 comprises a functional group selected from the group consisting of alkyl, heteralkyl, aryl, and heteroaryl.

~~23.~~ The valency platform molecule of claim ~~16~~, wherein G_2 comprises a functional group selected from the group consisting of a C1-200 hydrocarbon moiety; a C1-200 alkoxy moiety; and a C1-200 hydrocarbon moiety comprising an aromatic group.

~~24.~~ The valency platform molecule of claim ~~16~~, wherein G_2 comprises an oxyalkylene moiety.

10. 25. The valency platform molecule of claim 16, wherein G_2 comprises an oxyethylene moiety.

26. The valency platform molecule of claim 16, wherein G_2 comprises oxyethylene units:

$$-(CH_2CH_2O)_n-;$$

wherein n is 1-100.

12. 27. The valency platform molecule of claim 16, wherein each G_2 independently comprises a functional group selected from the group consisting of amine; amide; ester; ether; ketone; aldehyde; carbamate; thioether; piperazinyl; piperidinyl; alcohol; polyamine; polyether; hydrazide; hydrazine; carboxylic acid; anhydride; halo; sulfonyl; sulfonate; sulfone; imidate; cyanate; isocyanate; isothiocyanate; formate; carbodiimide; thiol; oxime; imine; aminooxy; and maleimide.

28. The valency platform molecule of claim 16 having the formula:

$$R^c[O\text{-}C(=O)\text{-}NR^1\text{-}G_2\text{-}(ONH_2)_n]_y$$

Formula 3.

29. The valency platform molecule of claim 16 having the formula:

$$R^c[C(=O)\text{-}NR^1\text{-}G_2\text{-}(ONH_2)_n]_y$$

Formula 4.

30. The valency platform molecule of claim 16 having the formula:

$$R^c[NR^1\text{-}C(=O)\text{-}G_2\text{-}(ONH_2)_n]_y$$

Formula 5.

31. The valency platform molecule of claim 16 having the formula:

$$R^c[NR^1\text{-}C(=O)\text{-}O\text{-}G_2\text{-}(ONH_2)_n]_y$$

Formula 6.

32. The valency platform molecule of claim 16 having the formula:

$$R^c[R^1C{=}N\text{-}O\text{-}G_2\text{-}(ONH_2)_n]_y$$

Formula 7.

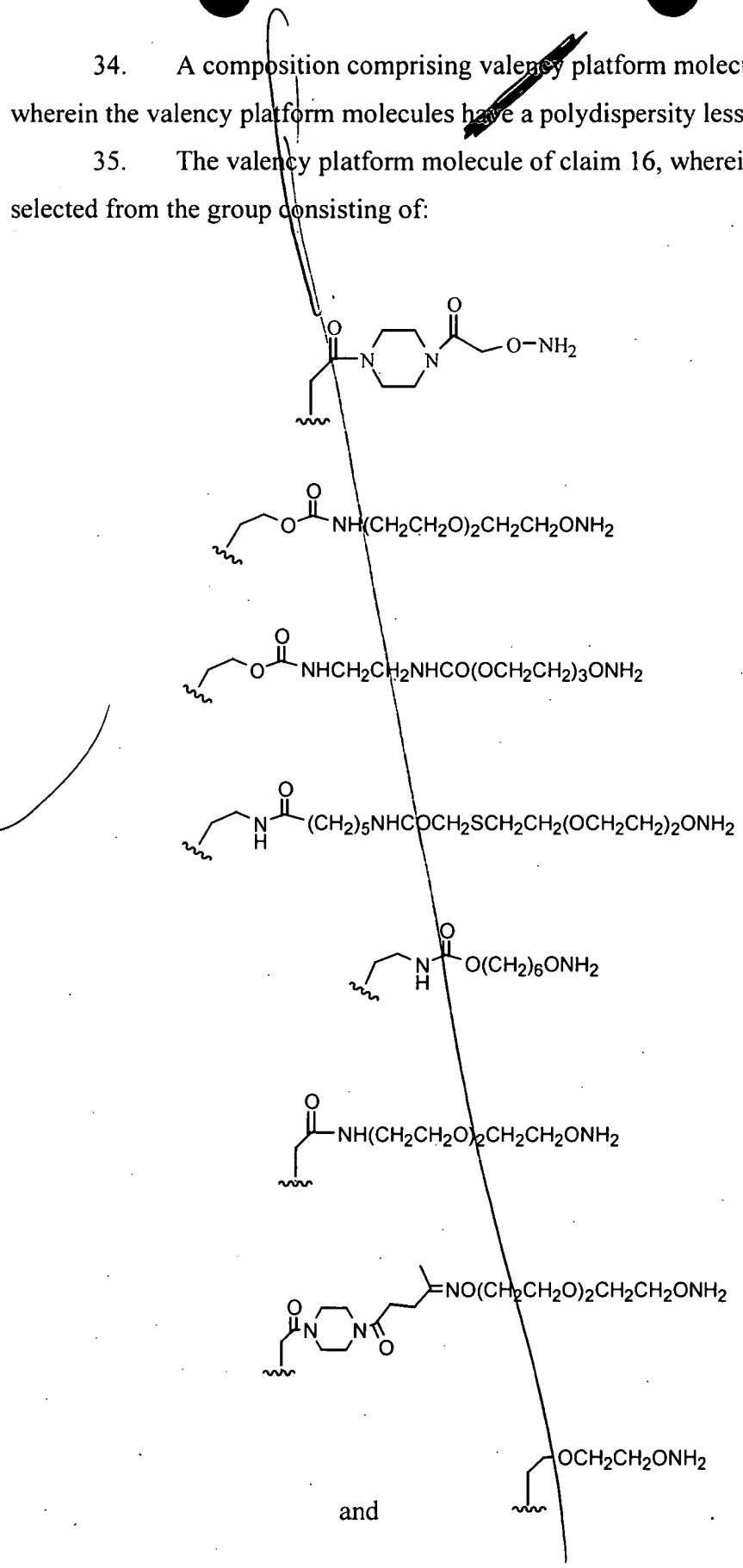
33. The valency platform molecule of claim 16 having the formula:

$$R^c[S\text{-}G_2(ONH_2)_n]_y$$

Formula 8.

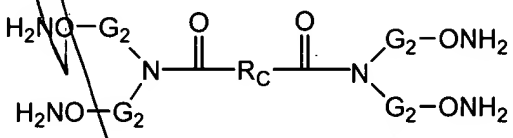
34. A composition comprising valency platform molecules of claim 16, wherein the valency platform molecules have a polydispersity less than about 1.2

35. The valency platform molecule of claim 16, wherein each G_2-ONH_2 is selected from the group consisting of:

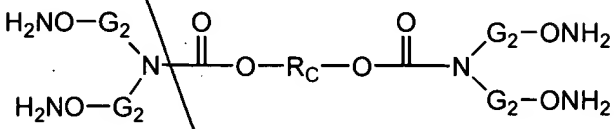


and

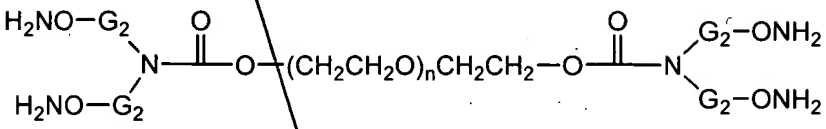
36. The valency platform molecule of claim 16 having a formula selected from the group consisting of:



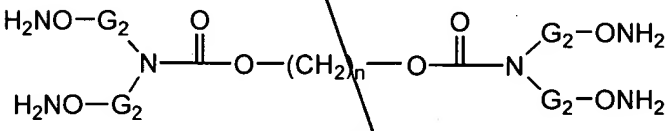
Formula 9



Formula 10

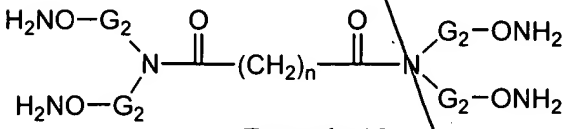


Formula 11



Formula 12

and

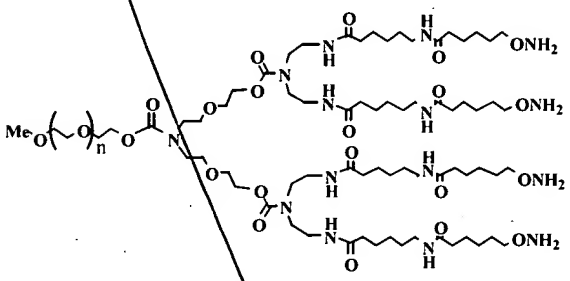


Formula 13

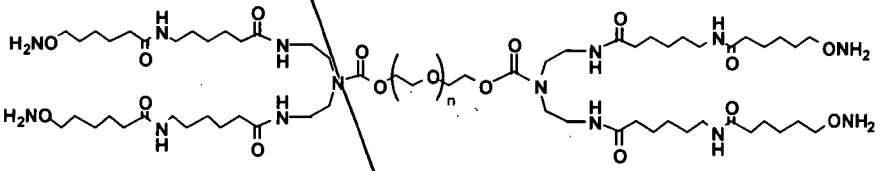
wherein n is 1 to 100.

37. The valency platform molecule of claim 36, wherein G_2 comprises an oxyethylene group.

38. A valency platform molecule having the structure:

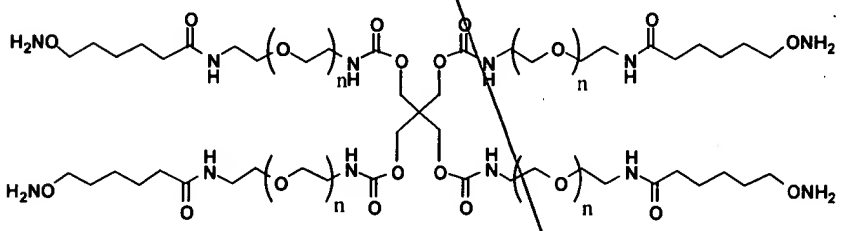


125c, where n is about 503; or



132, wherein n is about 481

39. A valency platform molecule having the structure:



136, wherein n is about 112.

40. A conjugate of a molecule of claim 1 and at least one biologically active molecule.

41. A conjugate of a molecule of claim 1 and at least three biologically active molecules.

42. The conjugate of claim 40 wherein the conjugate is an oxime conjugate or modified form thereof.

43. A conjugate of a molecule of claim 12 and a biologically active molecule.

44. A conjugate of a molecule of claim 16 and a biologically active molecule.

45. A conjugate of a molecule of claim 36 and a biologically active molecule.

46. A conjugate of a molecule of claim 38 and a biologically active molecule.

47. A conjugate of a molecule of claim 39 and a biologically active molecule.

48. The conjugate of claim 40 wherein the biologically active molecule is selected from the group consisting of poly(saccharides), poly(amino acids), nucleic acids and lipids.

49. The conjugate of claim 43 wherein the biologically active molecule is selected from the group consisting of poly(saccharides), poly(amino acids), nucleic acids and lipids.

50. A method of making a conjugate of claim 40, the method comprising reacting aminooxy groups on the valency platform molecule with an aldehyde or ketone group on the biologically active molecule to form an oxime conjugate.

51. The method of claim 50, wherein the biologically active molecule is a poly(amino acid), and wherein the method comprises modifying the poly(amino acid) to include a terminal aldehyde group prior to the conjugation.

52. A composition comprising conjugates of claim 40, wherein the conjugates have a polydispersity of less than about 1.2.

53. A pharmaceutically acceptable composition comprising the conjugate of claim 40 and a pharmaceutically acceptable carrier.